

Reduce Computational Time: Surrogate Modeling and Surrogate-Based Optimisation

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Over the last years, the computational cost involved in performing numerical simulations for designing and optimising various engineering systems, such as aircraft wings, is continuously increasing. Our intention is to devise strategies to reduce the computational time involved with the design of various such engineering systems. Surrogate modeling is one of the active research areas where one can reduce the computational time involved with a design process by imitating the actual system using computationally very cheap approximation models. The goal of the PhD work is to develop generic surrogate modeling and surrogate based multi-objective optimisation techniques with an intention of applying them to various applications like wireless communication, aerodynamic design etc. In this context, the research, in particular, focuses on combining multi-fidelity data, modeling high-dimensional problems, implementing additional capabilities to an existing in-house surrogate modeling software tool, SUMO Toolbox.